



(19)

(11) Publication number:

**59075574 A**

Generated Document.

**PATENT ABSTRACTS OF JAPAN**(21) Application number: **57185376**(51) Int'l. Cl.: **H01M 8/06**(22) Application date: **23.10.82**

(30) Priority:

(43) Date of application publication: **28.04.84**

(84) Designated contracting states:

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**(54) HYDROGEN-USED  
POWER GENERATING  
SYSTEM**

(57) Abstract:

**PURPOSE:** To enable operation of the fuel burning heater for a steam reforming reactor under a pressure close to the atmospheric pressure, by reducing pressure of the offgas from a fuel cell containing oxygen by an expander compressor after the offgas has been heated by remaining heat in a hydrogen generating apparatus.

**CONSTITUTION:** Offgas containing oxygen from a fuel cell 1 operated under a pressurized condition is introduced through a line 7 into a heat exchanger 17 within a hydrogen generating apparatus 8 so as to be heated, then passed through an expander 11 of an expander compressor 10 so as to be reduced in its pressure, and then supplied through a line 18 to a fuel burning heater 9 for a steam reforming reactor as an oxygen source for the burning. At the same time, atmospheric air 13 is pressurized by a compressor 12 and supplied to the fuel cell 1 as its

oxygen source. Therefore, the fuel burning heater 9 for the steam reforming reactor within the hydrogen generating apparatus 8 can be operated under a pressure close to the atmospheric pressure without inviting any disadvantage in terms of consumed energy, and thus maintenance, inspection, and so forth can be greatly simplified.

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